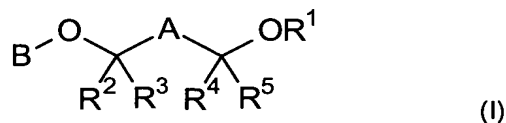


## CLAIMS

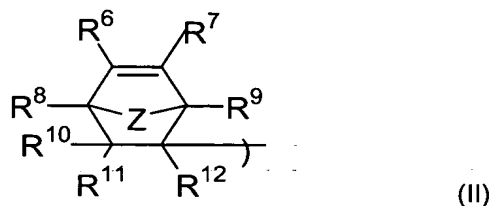
We claim:

1. A bridged carbocyclic compound comprising a bridged carbocyclic ring, and  
 5 an alkoxide group, wherein an oxygen of the alkoxide group is bonded to a ring-member of said bridged carbocyclic ring and to a carbon of the alkoxide group, and further wherein the carbon of the alkoxide group bonded to said oxygen has at least one  
 fluorine-containing group bonded to said carbon and further wherein said alkoxide group  
 has at least one hydroxyl group separated from said carbon that is bonded to said  
 10 oxygen and said fluorine-containing group by at least one additional carbon that is bonded to said carbon that is bonded to said oxygen.

2. The bridged carbocyclic compound of claim 1, having the following structure:



- 15 wherein A is a single bond, or a divalent organic group having 1 to 20 carbon atoms, and B is a bridged carbocyclic group of the type:



- wherein Z is  $\text{CH}_2$ ,  $\text{CHR}^{13}$ ,  $\text{CR}^{13}\text{R}^{14}$ ,  $\text{CH}_2\text{CH}_2$ ,  $\text{CH}_2\text{CHR}^{15}$ , or a heteroatom;  $\text{R}^1$   
 is a hydrogen, fluorinated alkylene alcohol group having 1 to 20 carbons, or a fluorinated  
 20 cycloalkylene alcohol group having 1 to 20 carbons; and  $\text{R}^{2-15}$  are each independently a  
 hydrogen atom, a fluorine atom, an alkyl group, a fluorinated alkyl group, a cycloalkyl  
 group, a fluorinated cycloalkyl group, a hydroxyl group, an alkoxyl group, a fluorinated

alkoxyl group, an acyl group, an acyloxy group, a fluorinated acyl group, a fluorinated acyloxy group, or any of said groups having an amine group, or an ether group therein, and R<sup>3</sup> and R<sup>4</sup> may be bonded together to form a portion of a five or six member ring which may contain heteroatoms, with the proviso that at least one of R<sup>2</sup> and R<sup>3</sup> and at least one of R<sup>4</sup> and R<sup>5</sup> are independently a fluorine, a fluorinated alkyl group or a fluorinated cycloalkyl group.

3. The compound of claim 2, wherein R<sup>2-15</sup> are each independently a hydrogen atom, a fluorine atom, a hydroxyl group, or comprises 1 to 20 carbons and is an alkyl group, a fluorinated alkyl group, a cycloalkyl group, a fluorinated cycloalkyl group, an alkoxyl group, a fluorinated alkoxyl group, an acyl group, an acyloxy group, a fluorinated acyl group, a fluorinated acyloxy group, or any of said groups having an amine group, or an ether group therein.

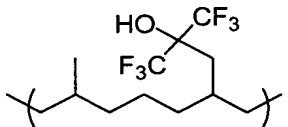
4. The compound of claim 2, wherein R<sup>3</sup> and R<sup>4</sup> are independently a fluorine atom, a fluorinated alkyl group or a fluorinated cycloalkyl group.

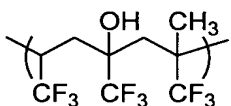
5. The compound of claim 2, wherein A is a single bond or comprises 1 to 15 carbons and is an alkylene group, a hydroxyl substituted alkylene group, a fluorinated alkylene group, a hydroxyl substituted fluorinated alkylene group, a cycloalkylene group, a hydroxyl substituted cycloalkylene group, a fluorinated cycloalkylene group, or a hydroxyl substituted fluorinated cycloalkylene group.

6. The compound of claim 2 wherein A is a single bond, or comprises 1 to 10 carbons and is an alkylene group, a hydroxyl substituted alkylene group, a fluorinated alkylene group, a hydroxyl substituted fluorinated alkylene group, a cycloalkylene group,

a hydroxyl substituted cycloalkylene group, a fluorinated cycloalkylene group, or a hydroxyl substituted fluorinated cycloalkylene group.

7. The compound of claim 2 wherein A is selected from the group consisting of methylene; ethane-1,1-diyl (ethylidene); ethane-1,2-diyl (ethylene); propane-1,1-diyl; propane-1,2-diyl; propane-1,3-diyl; butane-1,1-diyl; butane-1,2-diyl; butane-1,3-diyl; butane-1,4-diyl; butane-2,3-diyl; pentane-1,1-diyl; pentane-1,2-diyl; pentane-1,3-diyl; pentane-1,4-diyl; pentane-1,5-diyl; hexane-1,6-diyl; 2-methylpropane-1,2-diyl; 2-methylpropane-1,3-diyl; 3-methylbutane-1,3-diyl; 2-methylbutane-1,3-diyl; 2-methylbutane-1,4-diyl; 2,3-dimethylbutane-2,3-diyl; 2,5-dimethylhexane-1,6-diyl; 3-oxapentane-1,5-diyl; cyclopropane-1,1-diyl; cyclopropane-1,2-diyl; cyclobutane-1,1-diyl; cyclobutane-1,2-diyl; cyclobutane-1,3-diyl; cyclopentane-1,1-diyl; cyclopentane-1,2-diyl; cyclopentane-1,3-diyl; cyclohexane-1,1-diyl; cyclohexane-1,2-diyl; cyclohexane-1,3-diyl; cyclohexane-1,4-diyl; methylcyclohexane-1,4-diyl; 1,1,2,2-tetrafluoroethane-1,2-diyl;

- 15 3,3,3-trifluoropropane-1,2-diyl; and 2-hydroxypropane-1,3-diyl; ; and



8. The compound of claim 2, wherein Z is selected from the group consisting of oxygen, a nitrogen group, sulfur, and CH<sub>2</sub>.

20

9. The compound of claim 2, wherein Z is CH<sub>2</sub>.

10. The compound of claim 2 wherein  $R^{2-15}$  are each independently a hydrogen atom, a fluorine atom, a hydroxyl group, or comprises 1 to 20 carbons and is an alkyl group, a fluorinated alkyl group, a cycloalkyl group, a fluorinated cycloalkyl group, an alkoxy group, or a fluorinated alkoxy group.

5

11. The compound of claim 2 wherein  $R^{6-12}$  are each independently a fluorinated alkyl having 1 to 10 carbons, a fluorinated alkoxy group having 1 to 10 carbons, a hydrogen atom or a fluorine atom.

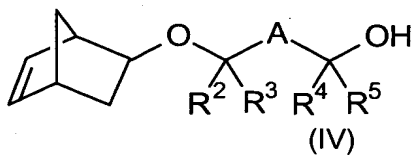
10 12. The compound of claim 2 wherein  $R^1$  is a hydrogen,  $R^4$  and  $R^5$  are each independently a fluorinated alkyl group having 1 to 5 carbons, a fluorinated cyclic alkyl group having 1 to 5 carbons or a fluorine atom.

15 13. The compound of claim 2 wherein  $R^1$  is a hydrogen, and  $R^2$ ,  $R^3$ ,  $R^4$  and  $R^5$  are  $-CF_3$ .

14. The compound of claim 2 wherein B is norbornenyl, or 7-oxanorbornenyl.

20 15. The compound of claim 2 wherein said compound comprises seven or more fluorine atoms.

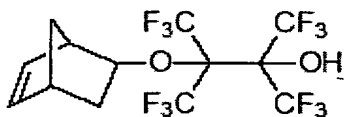
16. The compound of claim 2 comprising the following structure:



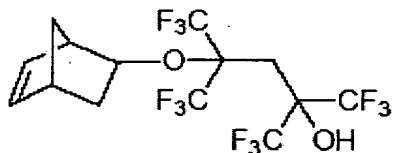
25

17. The compound of claim 16, wherein A is a single bond or any linear or branched alkyl group having 1 to 6 carbons, or fluorinated alkyl group having 1 to 15 carbons, or cycloalkyl group having 4 to 6 carbons, or fluorinated cycloalkyl group having 4 to 6 carbons, and wherein R<sup>2</sup> is a hydrogen atom, a fluorine atom, an alkyl group having 1 to 6 carbons, a fluorinated alkyl group having 1 to 6 carbons, a cycloalkyl group having 4 to 6 carbons, or a fluorinated cyclo alkyl group having 4 to 6 carbons, and R<sup>3-5</sup> are each independently a fluorinated alkyl group having 1 to 3 carbons or a fluorinated cycloalkyl group having 1 to 3 carbons.

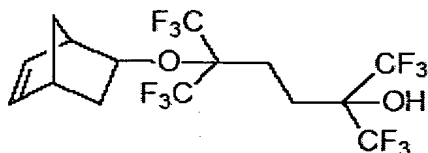
18. The compound of claim 16, selected from the group consisting of:



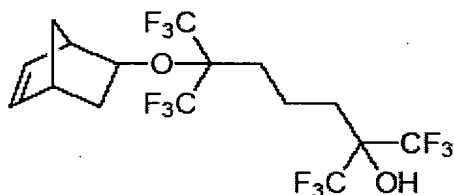
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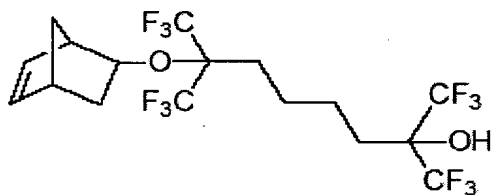
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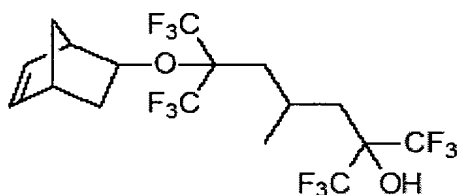
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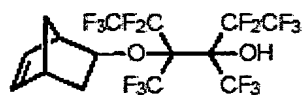
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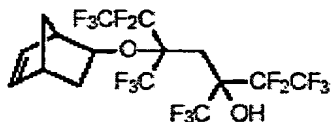
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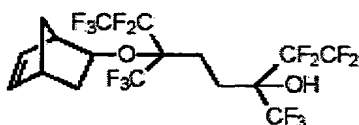
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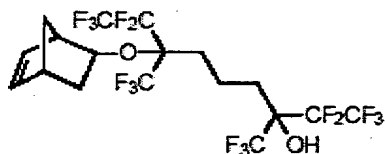
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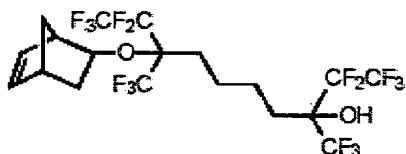
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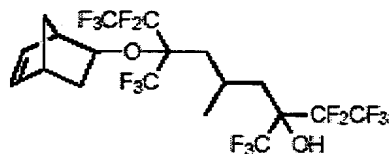
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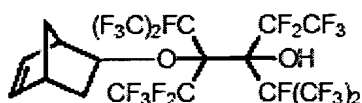
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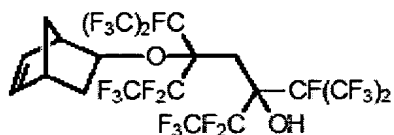
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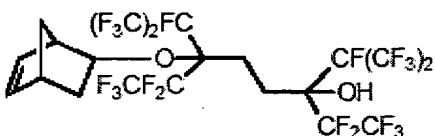
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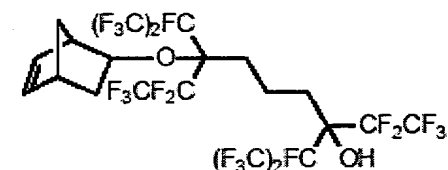
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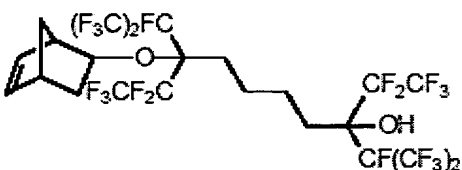
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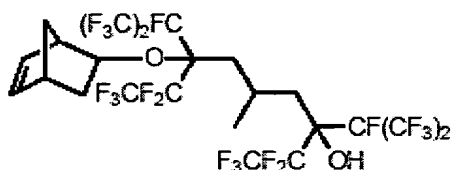
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7-bicyclo[2.2.1]hept-5-en-2-yloxy-3,7-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-1,1,1,2,2,8,8,9,9,9-decafluorononan-3-ol

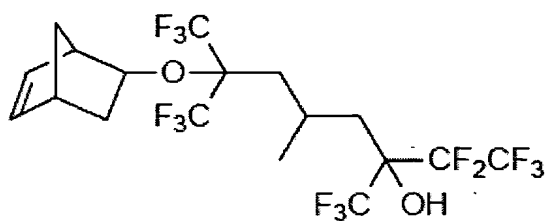


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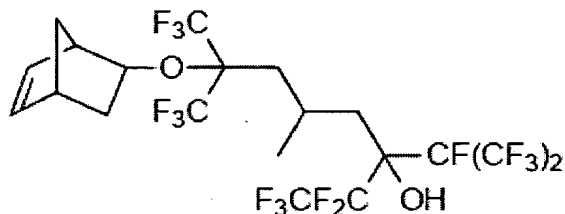


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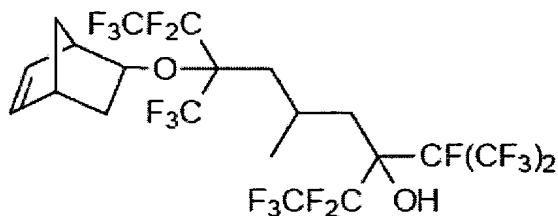




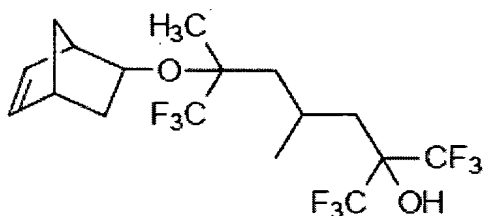
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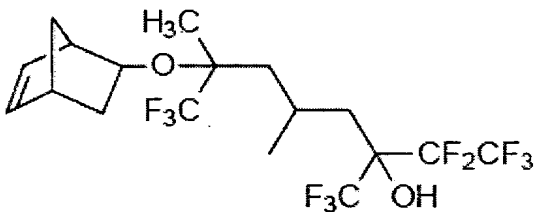
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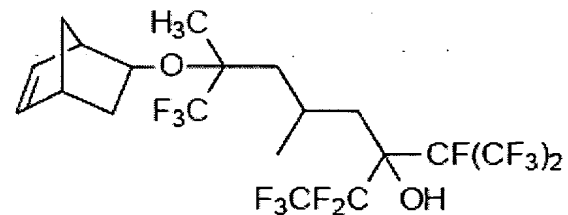
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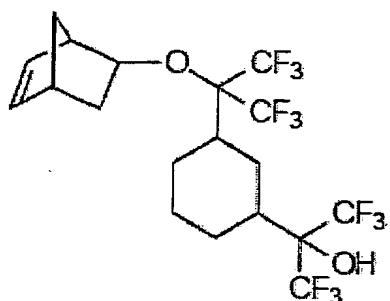
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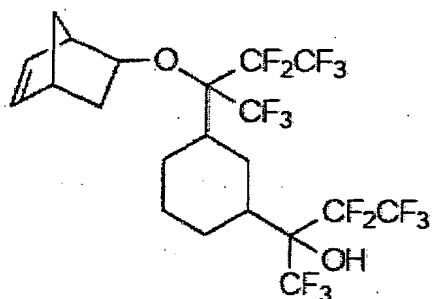
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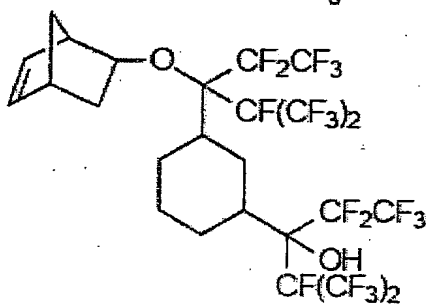
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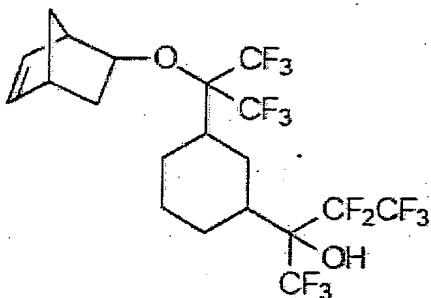
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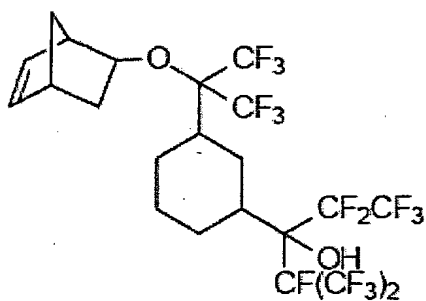
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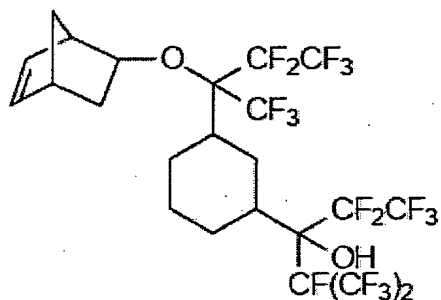
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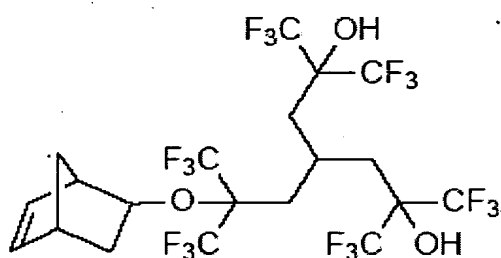
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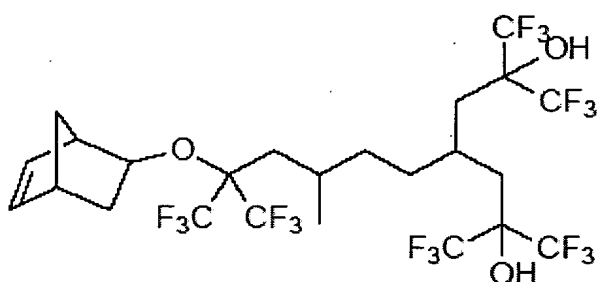
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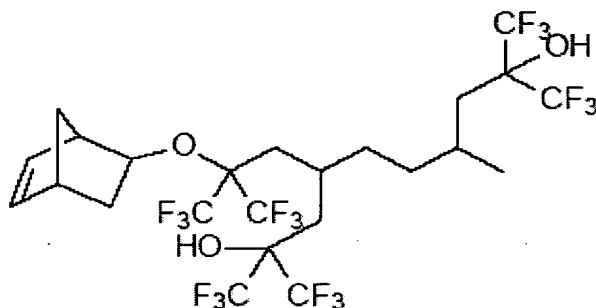
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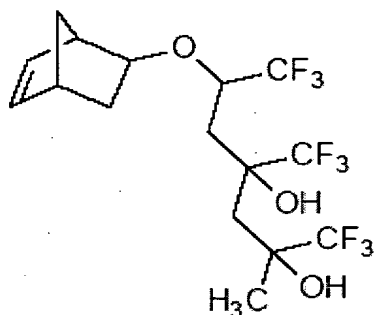
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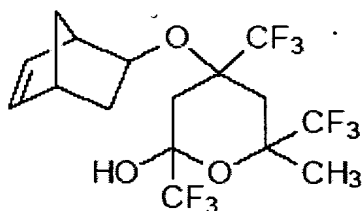
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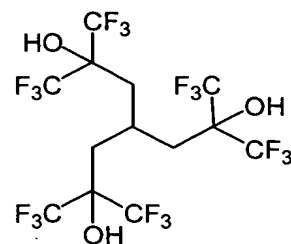
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6-bicyclo[2.2.1]hept-5-en-2-yloxy-1,1,1,7,7,7-hexafluoro-2-methyl-4-(trifluoromethyl)heptane-2,4-diol

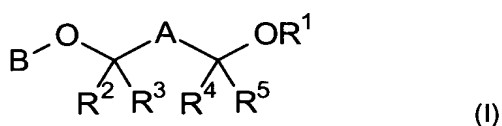


4-bicyclo[2.2.1]hept-5-en-2-yloxy-6-methyl-2,4,6-tris(trifluoromethyl)-2H-3,4,5,6-tetrahydropyran-2-ol

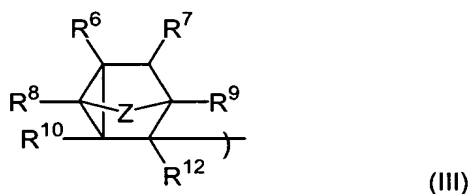


19. A compound comprising the following structure :

20. The bridged carbocyclic compound of claim 1 comprising the following  
5 structure:



wherein A is a single bond, or a divalent organic group having 1 to 20 carbon atoms, and  
B is a bridged carbocyclic group of the type:



10 wherein Z is CH<sub>2</sub>, CHR<sup>13</sup>, CR<sup>13</sup>R<sup>14</sup>, CH<sub>2</sub>CH<sub>2</sub>, CH<sub>2</sub>CHR<sup>15</sup>, or a heteroatom; R<sup>1</sup> is a  
hydrogen, fluorinated alkylene alcohol group, or a fluorinated cycloalkylene alcohol group  
having 1 to 20 carbons; and R<sup>2-10,12-15</sup> are each independently a hydrogen atom, a  
fluorine atom, an alkyl group, a fluorinated alkyl group, a cycloalkyl group, a fluorinated  
cycloalkyl group, a hydroxyl group, an alkoxy group, a fluorinated alkoxy group, an acyl  
15 group, an acyloxy group, a fluorinated acyl group, a fluorinated acyloxy group, or any of  
the said groups having an amine group, an ether group therein, and R<sup>3</sup> and R<sup>4</sup> may be  
bonded together to form a portion of a five or six member ring which may contain

heteroatoms, with the proviso that at least one of R<sup>2</sup> and R<sup>3</sup> and at least one of R<sup>4</sup> and R<sup>5</sup> are independently a fluorine, a fluorinated alkyl group or a fluorinated cycloalkyl group.

21. A method of making a bridged carbocyclic compound comprising the  
5 steps of:  
combining a bridged carboxylic reaction material and a fluorinated alcohol to  
form a reaction mixture and  
reacting said bridged carboxylic reaction material and said fluorinated alcohol to  
produce said bridged carbocyclic compound.

10

22. The method of claim 21 wherein said carboxylic reaction material is  
selected from the group consisting of quadricyclane, tetracyclo[4.2.0.0<sup>2,8</sup>.0<sup>5,7</sup>]octane,  
thioquadricyclane, oxaquadricyclane, or substituted derivative of quadricyclane,  
tetracyclo[4.2.0.0<sup>2,8</sup>.0<sup>5,7</sup>]octane, thioquadricyclane, or oxaquadricyclane.

15

23. The method of claim 21 wherein said fluorinated alcohol and said bridged  
carbocyclic reaction material are combined in a molar ratio between from 1:1 to 3:1.

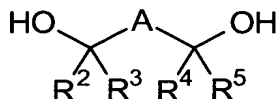
24. The method of claim 21 wherein said reaction mixture further comprises a  
20 solvent selected from the group consisting of an ether solvent, an aromatic solvent, a  
nitrile, or an alkyl alcohol, or mixtures of said solvents.

25. The method of claim 21 wherein said reaction mixture further comprises  
an acid or an acid catalyst.

25

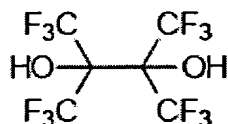
26. The method of claim 21 further wherein said reacting step produces an isomer of said bridged carbocyclic compound.

27. The method of claim 21 wherein the fluorinated alcohols have the following structural formula:

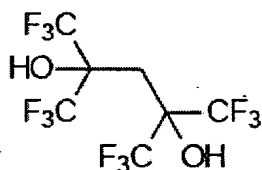


wherein A is a single bond, or a divalent organic group having 1 to 20 carbon atoms,  $\text{R}^2$ ,  $\text{R}^3$ ,  $\text{R}^4$ , and  $\text{R}^5$  are each independently a hydrogen atom, a fluorine atom, an alkyl group, a fluorinated alkyl group, a cycloalkyl group, a fluorinated cycloalkyl group, a hydroxyl group, an alkoxyl group, a fluorinated alkoxyl group, an acyl group, an acyloxy group, a fluorinated acyl group, a fluorinated acyloxy group, or any of said groups having an amine group, or an ether group therein, and  $\text{R}^3$  and  $\text{R}^4$  may be bonded together to form a portion of a five or six member ring which may contain heteroatoms, with the proviso that at least one of  $\text{R}^2$  and  $\text{R}^3$  and at least one of  $\text{R}^4$  and  $\text{R}^5$  is fluorine, a fluorinated alkyl group or a fluorinated cycloalkyl group.

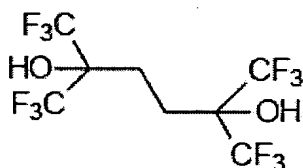
28. The method of claim 21 wherein said fluorinated alcohols are selected from the group consisting of:



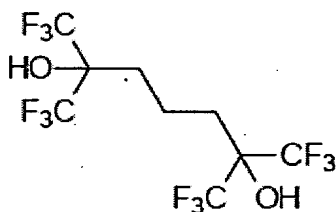
2,3-bis(trifluoromethyl)-1,1,1,4,4,4-hexafluorobutane-2,3-diol



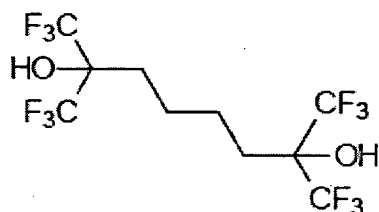
2,4-bis(trifluoromethyl)-1,1,1,5,5,5-hexafluoropentane-2,4-diol



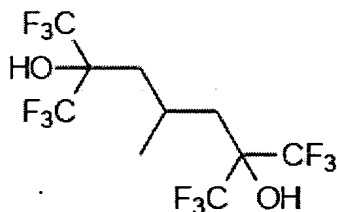
2,5-bis(trifluoromethyl)-1,1,1,6,6,6-hexafluorohexane-2,5-diol



2,6-bis(trifluoromethyl)-1,1,1,7,7,7-hexafluoroheptane-2,6-diol

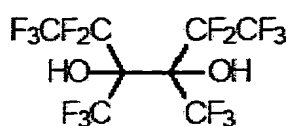


2,7-bis(trifluoromethyl)-1,1,1,8,8,8-hexafluorooctane-2,7-diol

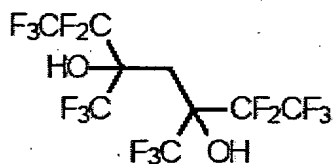


2,6-bis(trifluoromethyl)-1,1,1,7,7,7-hexafluoro-4-methylheptane-2,6-diol

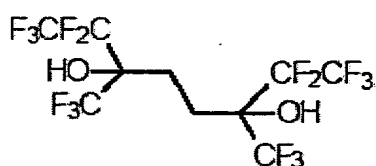




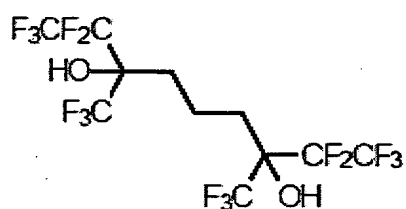
3,4-bis(trifluoromethyl)-1,1,1,2,2,5,5,6,6,6-decafluorohexane-3,4-diol



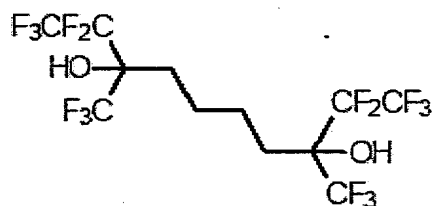
3,5-bis(trifluoromethyl)-1,1,1,2,2,6,6,7,7,7-decafluoroheptane-3,5-diol



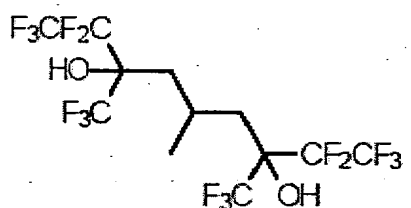
3,6-bis(trifluoromethyl)-1,1,1,2,2,7,7,8,8,8-nonafluorooctane-3,6-diol



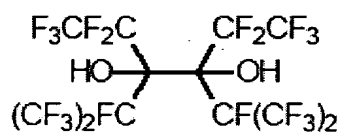
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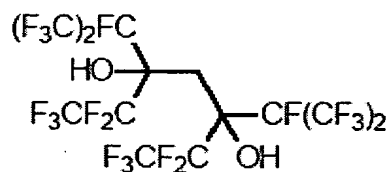
3,8-bis(trifluoromethyl)-1,1,1,2,2,9,9,10,10,10-decafluorodecane-3,8-diol



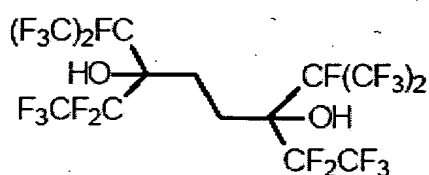
3,7-bis(trifluoromethyl)-1,1,1,2,2,8,8,9,9,9-decafluoro-5-methylnonane-3,7-diol



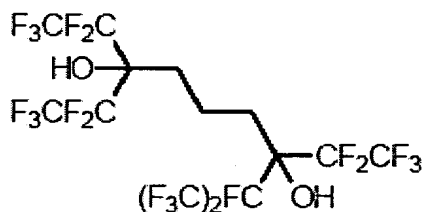
3,4-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-1,1,1,2,2,5,5,6,6,6-decafluorohexane-3,4-diol



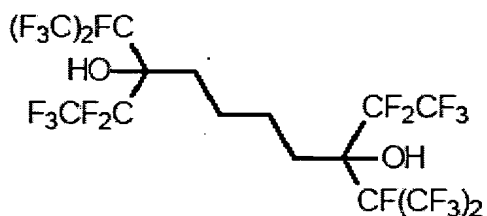
3,5-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-1,1,1,2,2,6,6,7,7,7-decafluoroheptane-3,5-diol



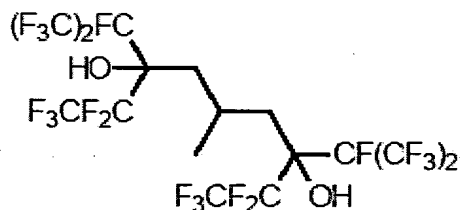
3,6-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-1,1,1,2,2,7,7,8,8,8-decafluorooctane-3,6-diol



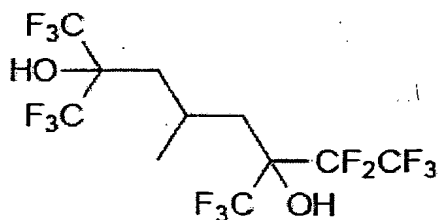
3,7-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-1,1,1,2,2,8,8,9,9,9-decafluorononane-3,7-diol



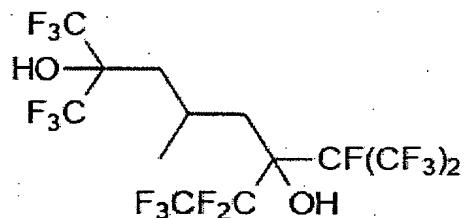
3,8-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-1,1,1,2,2,9,9,10,10,10-decafluorodecane-3,8-diol



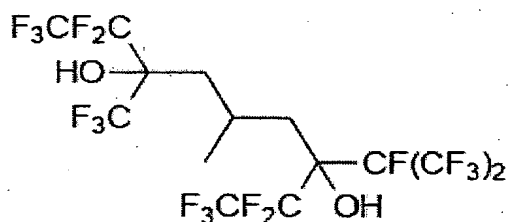
3,7-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-1,1,1,2,2,8,8,9,9,9-decafluoro-5-methylnonane-3,7-diol



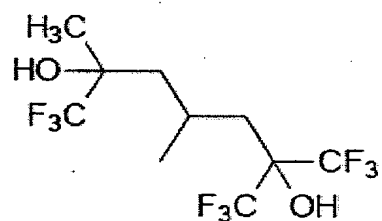
2,6-bis(trifluoromethyl)-1,1,1,7,7,8,8,8-octafluoro-4-methyloctane-2,6-diol



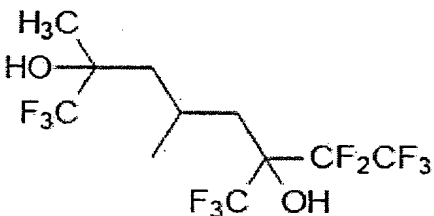
1,1,1,7,7,8,8,8-octafluoro-4-methyl-6-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-2-(trifluoromethyl)octane-2,6-diol



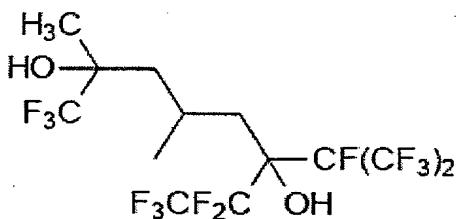
1,1,1,2,2,8,8,9,9,9-decafluoro-5-methyl-3-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-7-(trifluoromethyl)nonane-3,7-diol



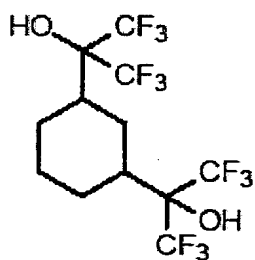
1,1,1,7,7,7-hexafluoro-2,4-dimethyl-6-(trifluoromethyl)heptane-2,6-diol



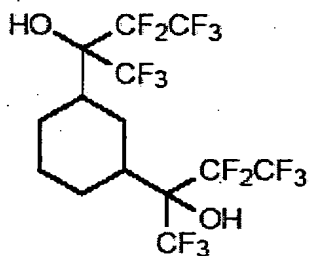
1,1,1,7,7,8,8,8-octafluoro-2,4-dimethyl-6-(trifluoromethyl)octane-2,6-diol



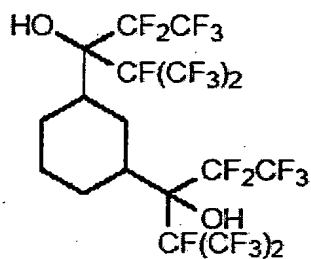
1,1,1,7,7,8,8,8-octafluoro-2,4-dimethyl-6-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]octane-2,6-diol



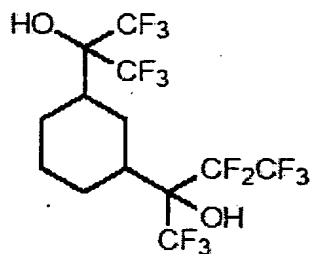
1,1,1,3,3,3-hexafluoro-2-{3-[2,2,2-trifluoro-1-hydroxy-1-(trifluoromethyl)ethyl]cyclohexyl}propan-2-ol



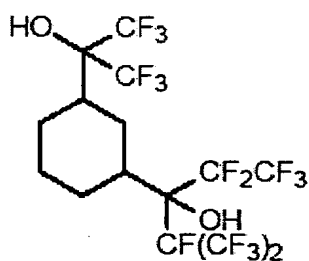
1,1,1,3,3,4,4,4-octafluoro-2-{3-[2,2,3,3,3-pentafluoro-1-hydroxy-1-(trifluoromethyl)propyl]cyclohexyl}butan-2-ol



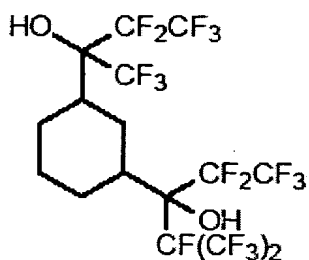
1,1,1,2,4,4,5,5,5-nonafluoro-3-(3-{2,2,3,3,3-pentafluoro-1-hydroxy-1-[1,2,2,2-tetrafluoro-1(trifluoromethyl)ethyl]propyl}cyclohexyl)-2-(trifluoromethyl)pentan-3-ol



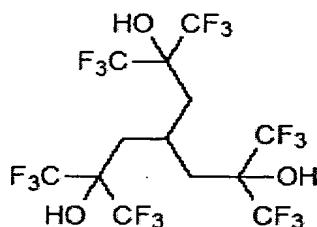
1,1,1,3,3,4,4,4-octafluoro-2-{3-[2,2,2-trifluoro-1-hydroxy-1-(trifluoromethyl)ethyl]cyclohexyl}butan-2-ol



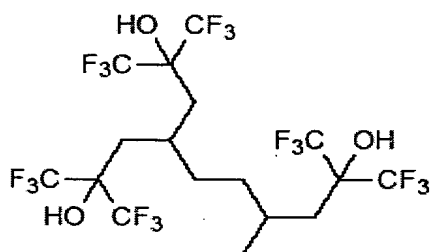
1,1,1,2,2,4,5,5,5-nonafluoro-3-{3-[2,2,2-trifluoro-1-hydroxy-1-(trifluoromethyl)ethyl]cyclohexyl}-4-(trifluoromethyl)pentan-3-ol



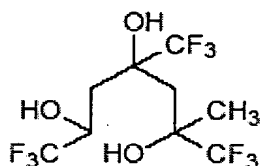
1,1,1,2,2,4,5,5,5-nonafluoro-3-{3-[2,2,3,3,3-pentafluoro-1-hydroxy-1-(trifluoromethyl)propyl]cyclohexyl}-4-(trifluoromethyl)pentan-3-ol



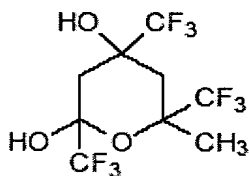
2,6-bis(trifluoromethyl)-1,1,1,7,7,7-hexafluoro-4-[3,3,3-trifluoro-2-hydroxy-2-(trifluoromethyl)propyl]heptane-2,6-diol



2,9-bis(trifluoromethyl)-1,1,1,10,10,10-hexafluoro-4-methyl-7-[3,3,3-trifluoro-2-hydroxy-2-(trifluoromethyl)propyl]decane-2,9-diol



1,1,1,7,7,7-hexafluoro-2-methyl-4-(trifluoromethyl)heptane-2,4,6-triol



6-methyl-2,4,6-tris(trifluoromethyl)-2H-3,4,5,6-tetrahydropyran-2,4-diol

29. The method of claim 21 wherein after said reacting step, the method further comprises the step of polymerizing said bridged carbocyclic compound.

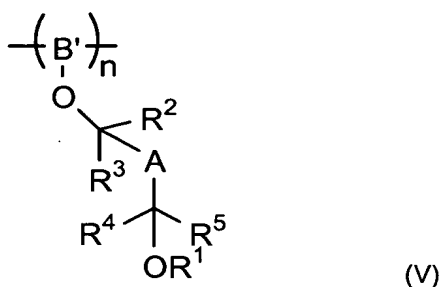
5 30. A method of polymerizing a bridged carbocyclic compound to form a polymer comprising the step of combining a metal catalyst, a molecular weight modifier and a bridged carbocyclic compound, wherein said bridged carbocyclic compound

comprises a bridged carbocyclic ring, and an alkoxide group, wherein an oxygen of the alkoxide group is bonded to a ring-member of said bridged carbocyclic ring and to a carbon of the alkoxide group, and further wherein the carbon of the alkoxide group bonded to said oxygen has at least one fluorine-containing group bonded to said carbon and further wherein the alkoxide group has at least one hydroxyl group separated from said carbon that is bonded to said oxygen and said fluorine-containing group by at least one additional carbon that is bonded to said carbon that is bonded to said oxygen.

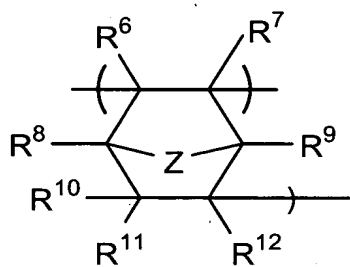
31. The method of claim 30 wherein said molecular weight modifier is ethyl acetate.

32. A polymer comprising polymerized units of a bridged carbocyclic compound comprising a bridged carbocyclic ring, and an alkoxide group, wherein an oxygen of the alkoxide group is bonded to a ring-member of said bridged carbocyclic ring and to a carbon of the alkoxide group, and further wherein the carbon of the alkoxide group bonded to said oxygen has at least one fluorine-containing group bonded to said carbon and wherein the alkoxide group has at least one hydroxyl group separated from said carbon that is bonded to said oxygen and said fluorine-containing group by at least one additional carbon that is bonded to said carbon that is bonded to said oxygen.

33. The polymer of claim 32 wherein said polymerized units comprise the following formula:



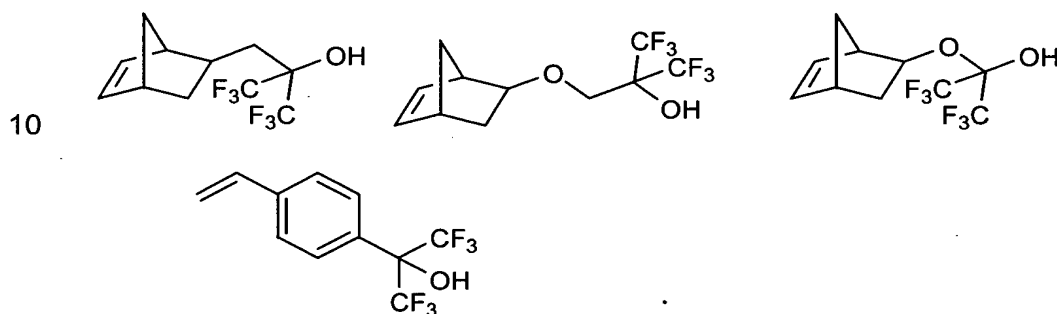
wherein A is a single bond, or a divalent organic group having 1 to 20 carbon atoms, and B' is a bridged carbocyclic group of the type:



wherein Z is CH<sub>2</sub>, CHR<sup>13</sup>, CR<sup>13</sup>R<sup>14</sup>, CH<sub>2</sub>CH<sub>2</sub>, CH<sub>2</sub>CHR<sup>15</sup>, or a heteroatom; R<sup>1</sup> is a hydrogen, fluorinated alkylene alcohol group, or a fluorinated cycloalkylene alcohol group having 1 to 20 carbons; and R<sup>2-15</sup> are each independently a hydrogen atom, a fluorine atom, an alkyl group, a fluorinated alkyl group, a cycloalkyl group, a fluorinated cycloalkyl group, a hydroxyl group, an alkoxyl group, a fluorinated alkoxyl group, an acyl group, an acyloxy group, a fluorinated acyl group, a fluorinated acyloxy group, or any of said groups having an amine group, or an ether group therein, and R<sup>3</sup> and R<sup>4</sup> may be bonded together to form a portion of a five or six member ring which may contain heteroatoms, with the proviso that at least one of R<sup>2</sup> and R<sup>3</sup> and at least one of R<sup>4</sup> and R<sup>5</sup> are independently a fluorine, a fluorinated alkyl group or a fluorinated cycloalkyl group, and n is 3 to 500.

34. The polymer of claim 32 further comprising polymerized units of at least one other ethylenically unsaturated monomer.

35. The polymer of claim 34 wherein said ethylenically unsaturated monomers are selected from the group consisting of C<sub>1</sub>-C<sub>18</sub> alkyl (meth)acrylate monomers, vinyl aromatic monomers, vinyl esters, vinyl-unsaturated carboxylic acids monomers, nitrogen-  
 5 containing vinyl unsaturated monomers, dienes, ethylene, norbornene, hydroxyethyl(meth)acrylate, hydroxypropyl(meth)acrylate, fluorinated olefins, partially and fully fluorinated derivatives of propylene, butylene, and isobutylene, fluorinated derivatives of maleic anhydride, fluoro- (meth)acrylates (vinyl substituted), and fluoro-methacrylates (methyl substituted), and fluorovinyl ethers,



36. The polymer of claim 34 wherein said ethylenically unsaturated monomer comprises acid-labile groups selected from the group consisting of tertiary alkoxy groups, tert-alkoxycarbonyl groups, alkoxy methyl groups, cyclic derivatives of alkoxy methyl  
 15 groups.

37. The polymer of claim 34 used in a photoresist composition.

38. A method of creating a patterned image on a substrate to form a circuit component comprising:

applying a photoresist composition comprising the polymer of claim 32 to a substrate

20 and exposing said photoresist composition to energy to produce a patterned image on said substrate.